FACULTY OF APPLIED SCIENCES

BACHELOR OF SCIENCE IN COMPUTING

LEARNING MODULE OUTLINE

Academic Year	2024/2025	Semester	2
Module Code	MATH321		
Learning Module	Statistics II		
Pre-requisite(s)	MATH211 Statistics I		
Medium of Instruction	English		
Credits	3	Contact Hours	45 hrs
Instructor	Dr. Edmund Yung	Email	edmundyung@mpu.edu.mo
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MODULE DESCRIPTION

This learning module continues to explore statistical inference in greater depth. Topics cover hypothesis testing, analysis of variance (ANOVA), chi-square tests, multiple correlation and regression, and sampling theory. The application of methods to the analysis of data using the statistical software SPSS will be emphasised.

MODULE INTENDED LEARNING OUTCOMES (ILOS)

On completion of this learning module, students will be able to:

M1.	Build on the previous experience with statistics; (SM2p, EA3p)
M2.	Utilize statistical reasoning and deduction to draw valid conclusions from given information; (SM2p, EA3p)
M3.	Tell the differences among various statistical techniques and identify an appropriate technique for a given set of variables and research questions; (SM2p, EA3p)
M4.	Carry out data analysis by means of SPSS and interpret the results. (EP3p)

These ILOs aims to enable students to attain the following Programme Intended Learning Outcomes (PILOs):

PILOs		M1	M2	M3	M4
P1.	Select and apply proven methods, tools and techniques to the effective and efficient implementation of information systems;				
P2.	Evaluate computer systems in a local area network, and understand the additional requirements for connection to other networks through wide area networks;				
P3.	Be competent in system development in the Internet and the web platform;				

P4.	Work independently to design and implement a relational database, with an emphasis on how to organise, maintain and retrieve information from a DBMS;				
P5.	Acquire essential knowledge in specific fields of computing disciplines including multimedia, security and artificial intelligence;				
P6.	Acquire the perceptive skills needed to understand information presented in the form of UML diagram, flow chart or other industry standard formats;				
P7.	Understand the need for and use of the necessary mathematical techniques;	✓	✓	✓	✓
P8.	Work independently to develop an understanding of, and the knowledge and skills associated with the general support of computer systems and networks;				
P9.	Work as an effective member of a team in the analysis, design and development of software systems;				
P10.	Use project planning and management techniques in systems development;				
P11.	Understand the fundamental and operational issues of computer systems in business environments;				
P12.	Equip with adequate written, oral communication and interpersonal skills;				
P13.	Build the capacity and desire for lifelong learning and to learn advanced and emerging technologies on one's own;				
P14.	(For Enterprise Information Systems specialization) Gain an in-depth understanding of the information technology related to enterprise information systems, with an emphasis on development of such systems to support business processes;				
P15.	(For Gaming Technology specialization) Acquire the general and advanced knowledge of current technologies and operating environment in the gaming industry;				
P16.	(For Computer Education specialization) Acquire the general and practical knowledge of computer education and its practicing environment in secondary education.				

MODULE SCHEDULE, COVERAGE AND STUDY LOAD

Week	Content Coverage	Contact Hours
1-3	1. Hypothesis Testing	9
	1.1 Tests involving single population	
	1.2 Tests involving two populations	
4-5	2. Analysis of Variance	4.5
	2.1 One-way ANOVA	
5-6	3. Chi-Square Test	3

	3.1 Test of independence	
6	4. Sampling Design	1.5
	4.1 Simple random sampling	
	4.2 Systematic random sampling	
	4.3 Stratified random sampling	
	4.4 Cluster sampling	
	4.5 Sample size determination	
7	5. Survey Methods	1.5
	5.1 Interviewing	
	5.2 Questionnaires	
7	6. Multiple Correlation	1.5
	6.1 The coefficients of multiple correlation	
	6.2 Partial correlation analysis	
8	7. Multiple Regression	1.5
	7.1 The Multiple Regression Model	
	7.2 Residual Analysis	
8-15	8. Use of Statistical Software	22.5
	8.1 Using SPSS for graphical presentation	
	8.2 Using SPSS for summarizing data	
	8.3 Using SPSS for interval estimation	
	8.4 Using SPSS for simple correlation and regression	
	8.5 Using SPSS for hypothesis testing	
	8.6 Using SPSS for one-way ANOVA	
	8.7 Using SPSS for chi-square test	
	8.8 Using SPSS for multiple correlation and regression	

TEACHING AND LEARNING ACTIVITIES

In this learning module, students will work towards attaining the ILOs through the following teaching and learning activities:

Teaching and Learning Activities	M1	M2	M3	M4

T1. Lectures	✓	✓	✓	✓
T2. In-class exercises	✓	✓	✓	✓

ATTENDANCE

Attendance requirements are governed by the Academic Regulations Governing Bachelor's Degree Programmes of the Macao Polytechnic University. Students who do not meet the attendance requirements for the learning module shall be awarded an 'F' grade.

ASSESSMENT

In this learning module, students are required to complete the following assessment activities:

Assessment Activities	Weighting (%)	AHEP3 LOs	ILOs to be Assessed
A1. Assignment / Classwork	10%	SM2p, EA3p	M1, M2, M3
A2. Tests	40%	SM2p, EA3p	M1, M2, M3
A3. Examination	50%	EP3p	M4

The assessment will be conducted following the University's Assessment Strategy (see www.mpu.edu.mo/teaching_learning/en/assessment_strategy.php). Passing this learning module indicates that students will have attained the ILOs of this learning module and thus acquired its credits.

Students with an overall score of less than 35 in the coursework must take the re-sit examination even if the overall score for the module is 50 or above.

Students with a score of less than 35 in the final examination must take the re-sit examination even if the overall score for the module is 50 or above.

Students with an overall final grade of less than 35 are NOT allowed to take the re-sit examination.

REQUIRED READINGS

1. Larson, R. & Farber, B. (2018). Elementary Statistics: Picturing the World (7th ed.). Pearson.

REFERENCES

1. Freund, J.E. (2001). Modern Elementary Statistics. Englewood Cliffs, NJ: Prentice Hall.

2. Wonnacott, T.H., & Wonnacott, R.J. (1990). Introductory Statistics. New York: Wiley.

3. Kazmier, L.J., & Pohl, N.F. (1987). Basic Statistics for Business and Economics. Singapore: McGraw-Hill.

STUDENT FEEDBACK

At the end of every semester, students are invited to provide feedback on the learning module and the teaching arrangement through questionnaires. Your feedback is valuable for instructors to enhance the module and its delivery for future students. The instructor and programme coordinators will consider all feedback and respond with actions formally in the annual programme review.

ACADEMIC INTEGRITY

The Macao Polytechnic University requires students to have full commitment to academic integrity when engaging in research and academic activities. Violations of academic integrity, which include but are not limited to plagiarism, collusion, fabrication or falsification, repeated use of assignments and cheating in examinations, are considered as serious academic offenses and may lead to disciplinary actions. Students should read the relevant regulations and guidelines in the Student Handbook which is distributed upon the admission into the University, a copy of which can also be found at www.mpu.edu.mo/student_handbook/.